

# **Targeting Immunity to Biothreats**

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## Report Documentation Page

<b>Report Date</b> 03APR2002	<b>Report Type</b> N/A	<b>Dates Covered (from... to)</b> 03APR2002 - 04APR2002
<b>Title and Subtitle</b> Targeting Immunity to Biothreats		<b>Contract Number</b> F19628-00-C-0002
		<b>Grant Number</b>
		<b>Program Element Number</b>
<b>Author(s)</b> Scadden, David		<b>Project Number</b>
		<b>Task Number</b>
		<b>Work Unit Number</b>
<b>Performing Organization Name(s) and Address(es)</b> Massachusetts General Hospital Harvard Medical School		<b>Performing Organization Report Number</b>
<b>Sponsoring/Monitoring Agency Name(s) and Address(es)</b> Air Force ESC/XPK (Richard Axtell) Hanscom AFB, MA 01731		<b>Sponsor/Monitor's Acronym(s)</b>
		<b>Sponsor/Monitor's Report Number(s)</b>
<b>Distribution/Availability Statement</b> Approved for public release, distribution unlimited		
<b>Supplementary Notes</b> Workshop paper from the New England Bioterrorism Preparedness Workshop held 3-4 april 2002 at MIT Lincoln Laboratory, Lexington, MA, The original document contains color images.		
<b>Abstract</b>		
<b>Subject Terms</b>		
<b>Report Classification</b> unclassified		<b>Classification of this page</b> unclassified
<b>Classification of Abstract</b> unclassified		<b>Limitation of Abstract</b> SAR
<b>Number of Pages</b> 18		

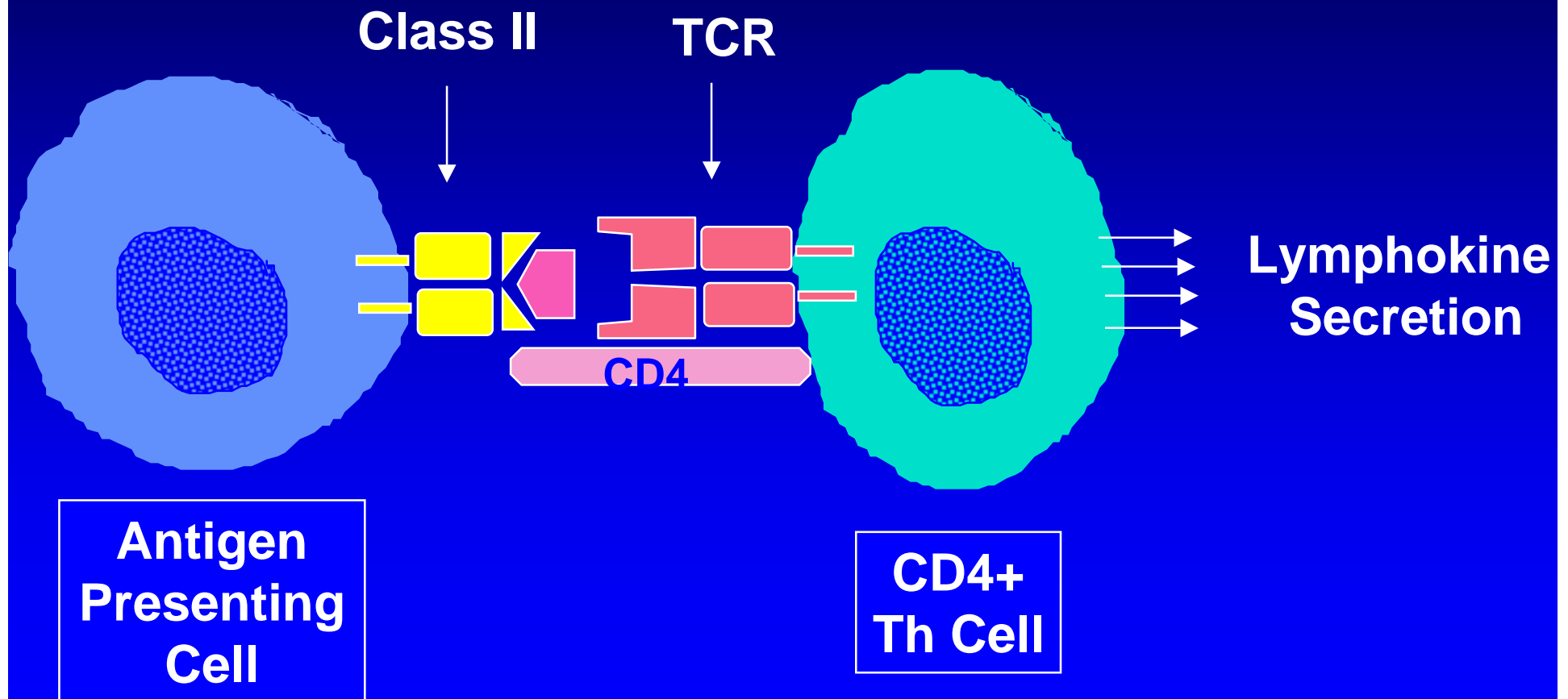
# Cellular immunity and HIV disease

Immune control of HIV infection is possible without anti-retroviral therapy

# Evidence for CTL control of HIV

- Negative correlation between CTL and viral load by more sensitive assays (Ogg et al)
- Increase in SIV viremia with CD8 cell depletion (Schmitz et al; Jin et al)
- Association between appearance of CTL and decline in viremia in acute infection (Koup et al; Borrow et al)

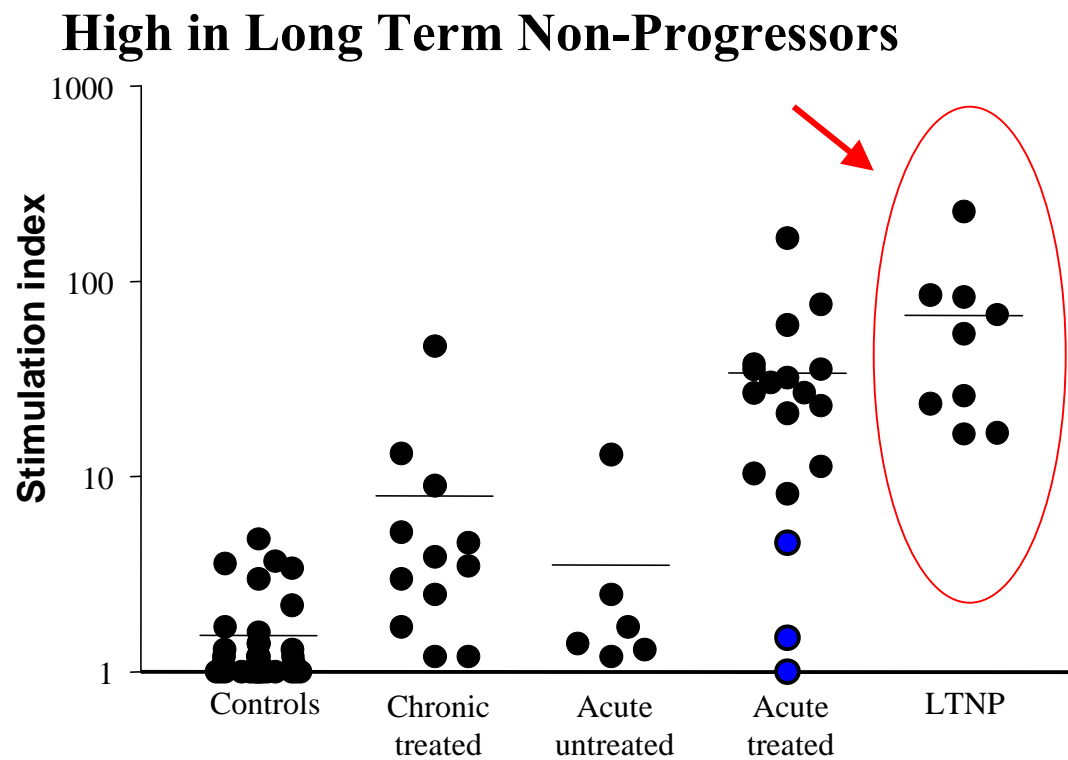
# Optimal CTL function depends on virus-specific T helper cells



**HIV-specific CD4+ T cell  
responses are associated with  
control of HIV**

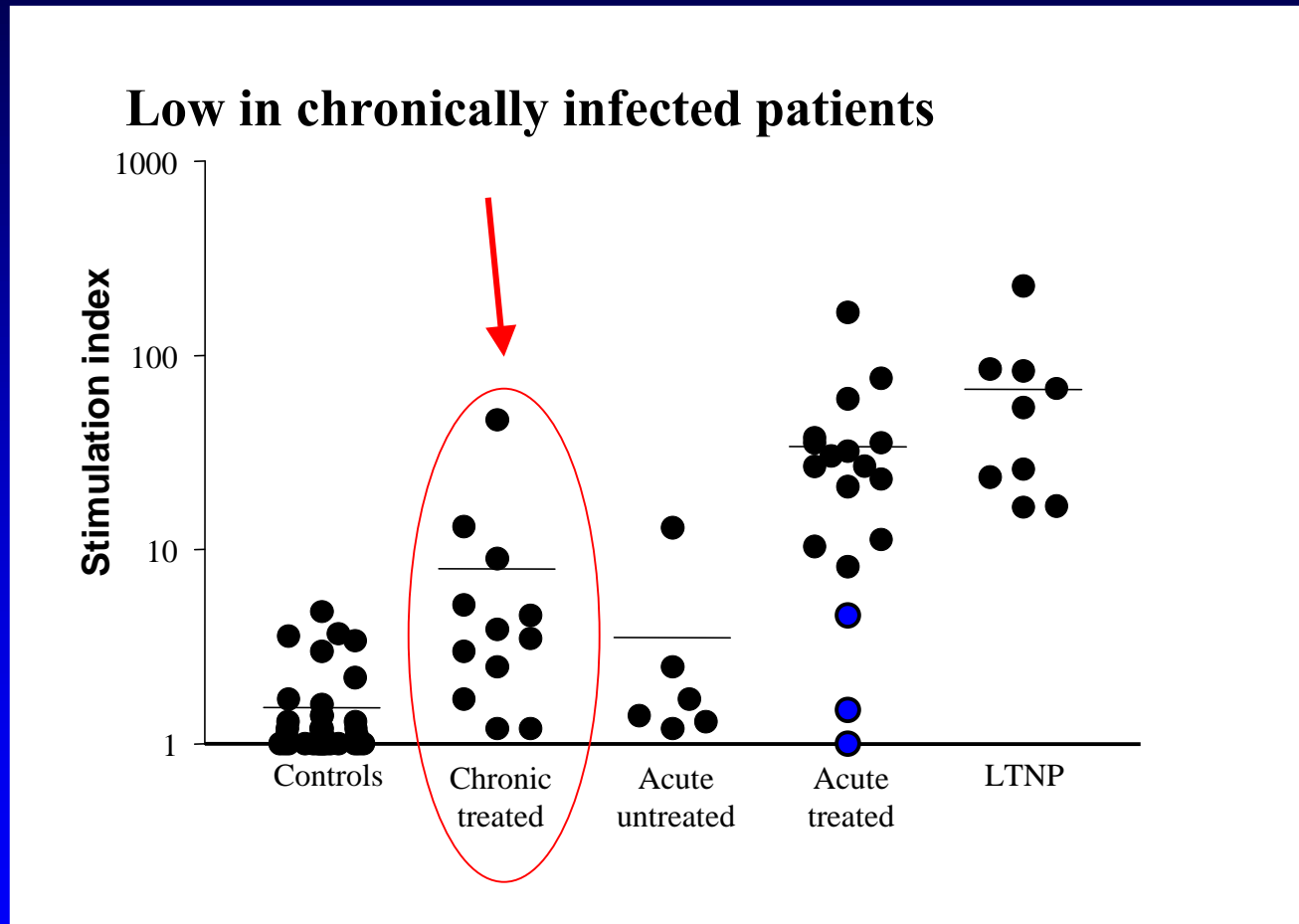
**Rosenberg et al. Science 1997; 278, 1447**

# HIV specific helper T cell function



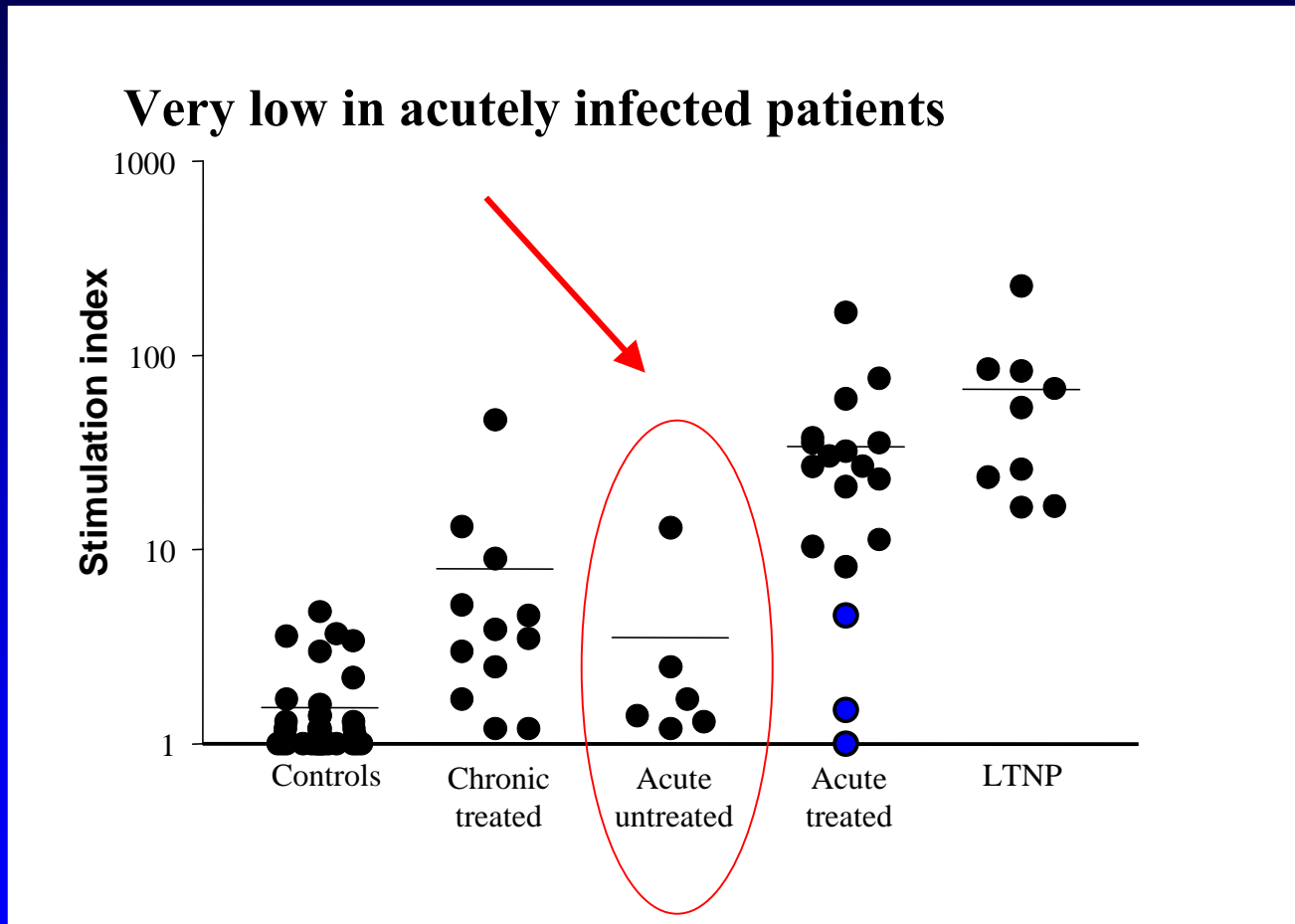
Rosenberg et al. Nature 2000; 407, 523

# HIV specific helper T cell function



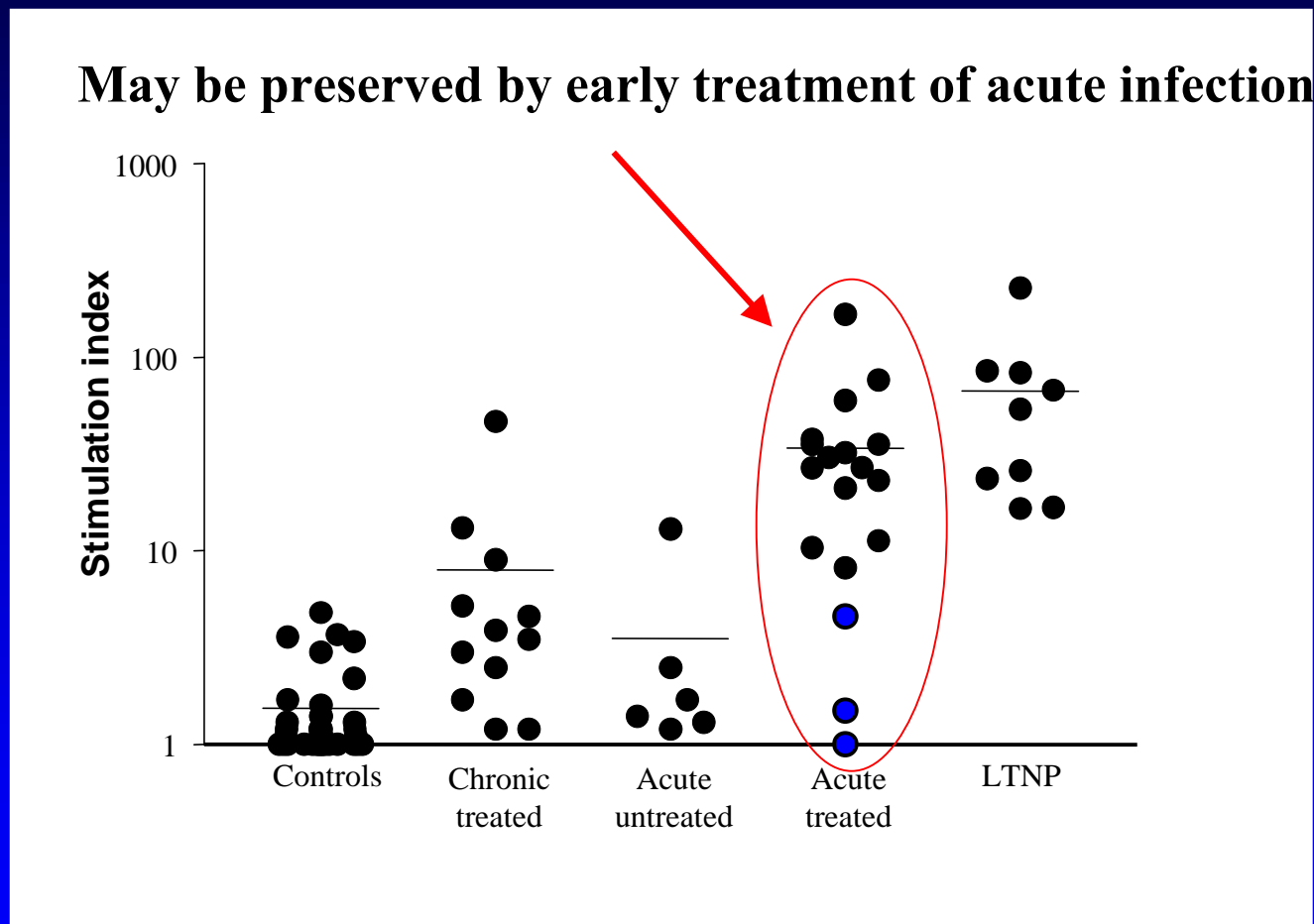
Rosenberg et al. Nature 2000; 407, 523

# HIV specific helper T cell function



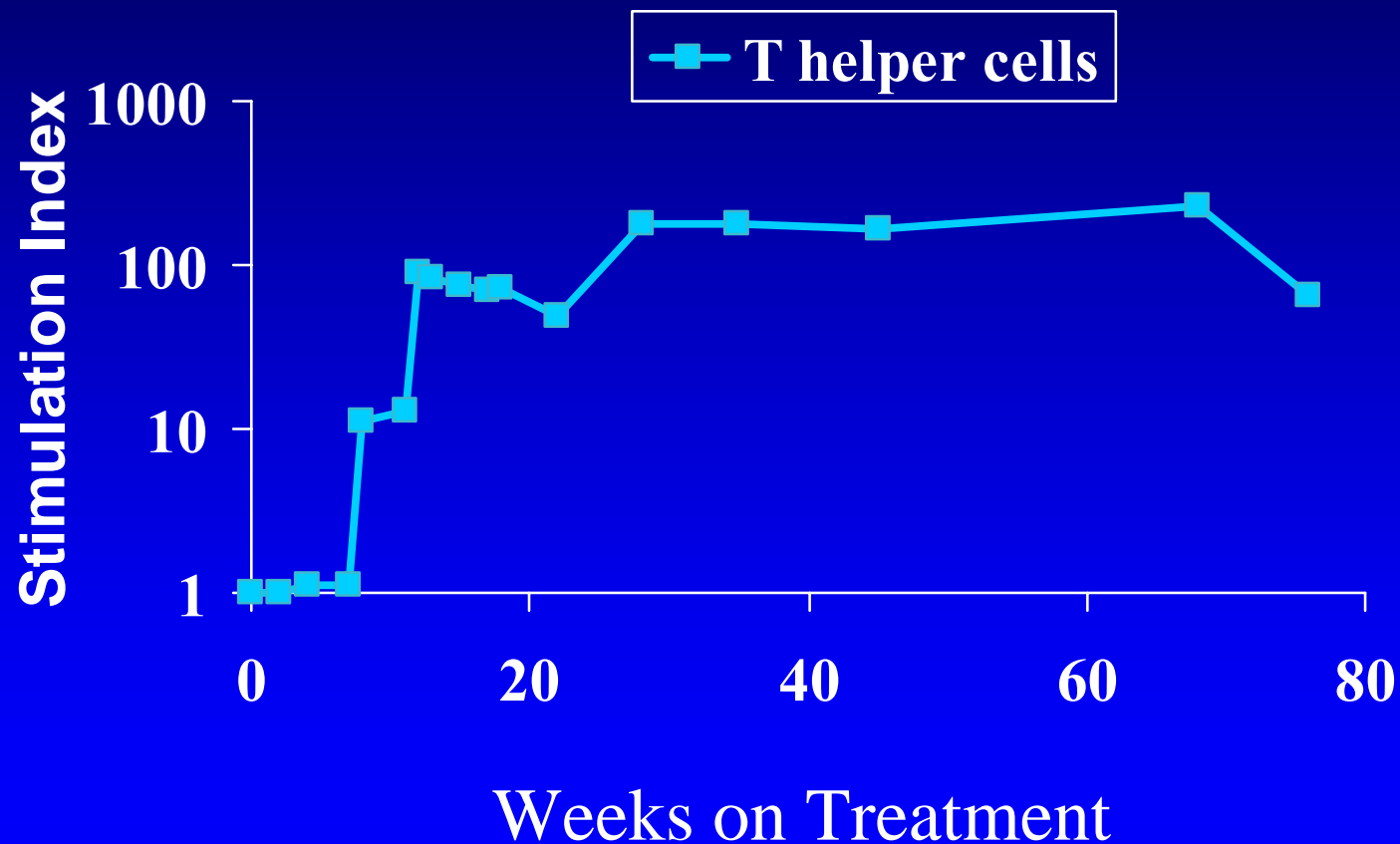
Rosenberg et al. Nature 2000; 407, 523

# HIV specific helper T cell function

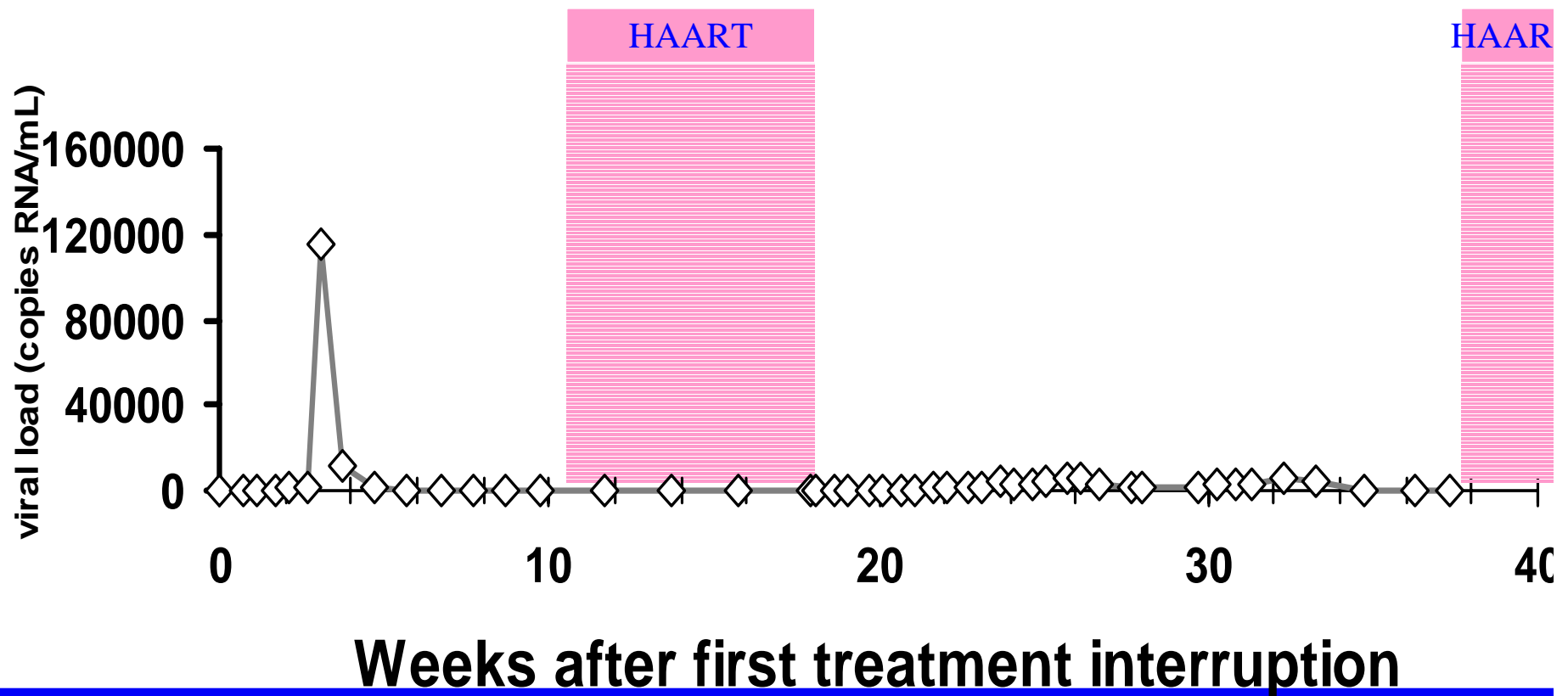


Rosenberg et al. Nature 2000; 407, 523

## Treatment of acute HIV-1 infection results in augmentation of T helper cell responses



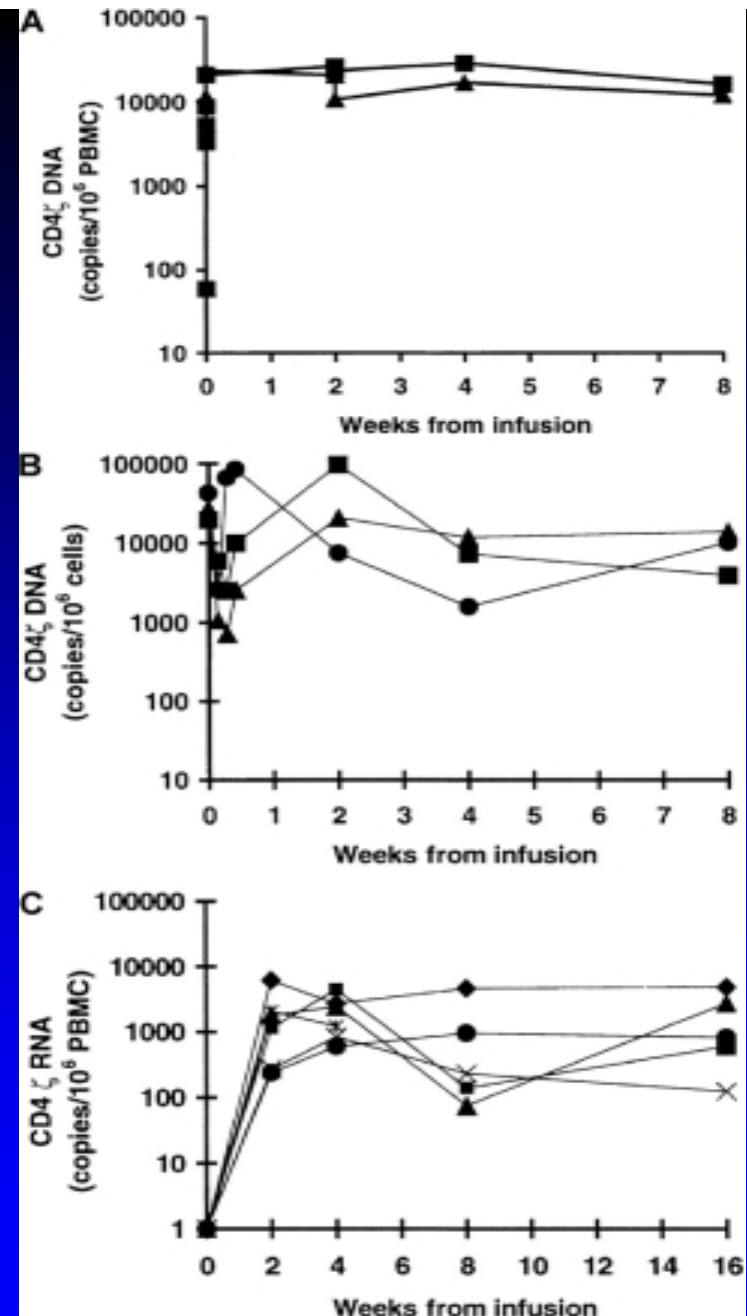
# Preserved HIV specific T cell helper function is associated with control of HIV without HAART



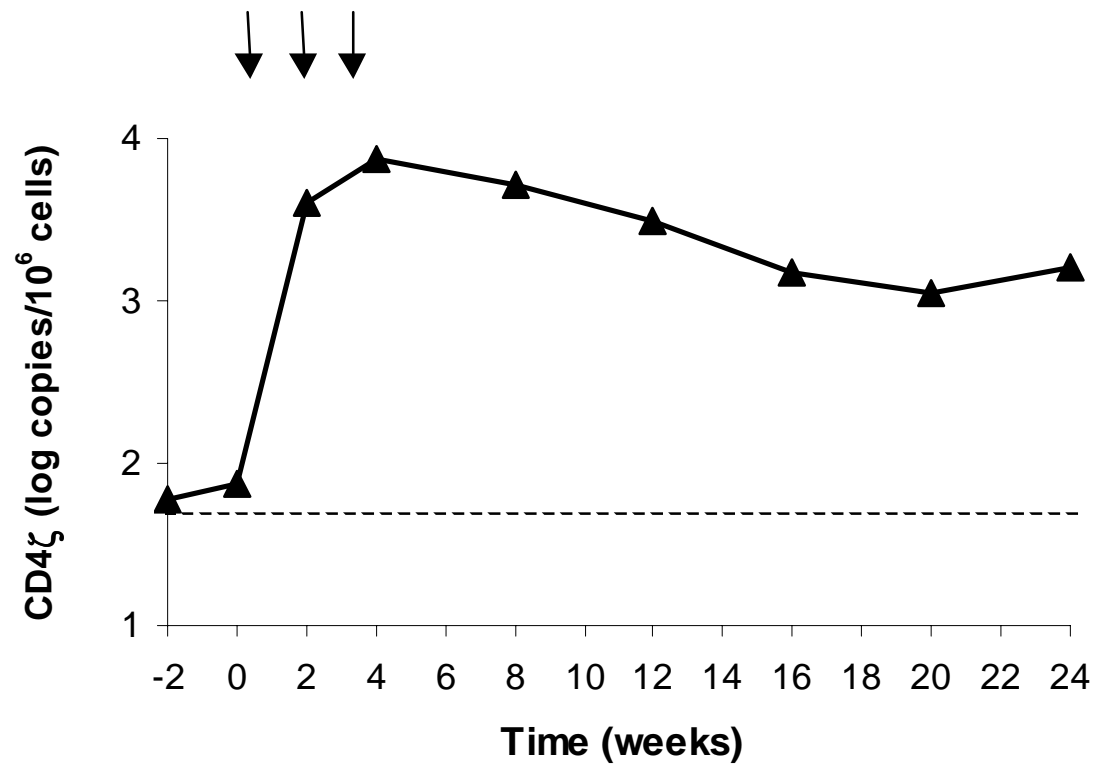
**Structured treatment  
interruptions (STI) in acute  
HIV infection may result in  
immunologic control of viremia**

# CD4 $\zeta$ -modified T-cell survival and gene expression in peripheral blood mononuclear cells (PBMCs)

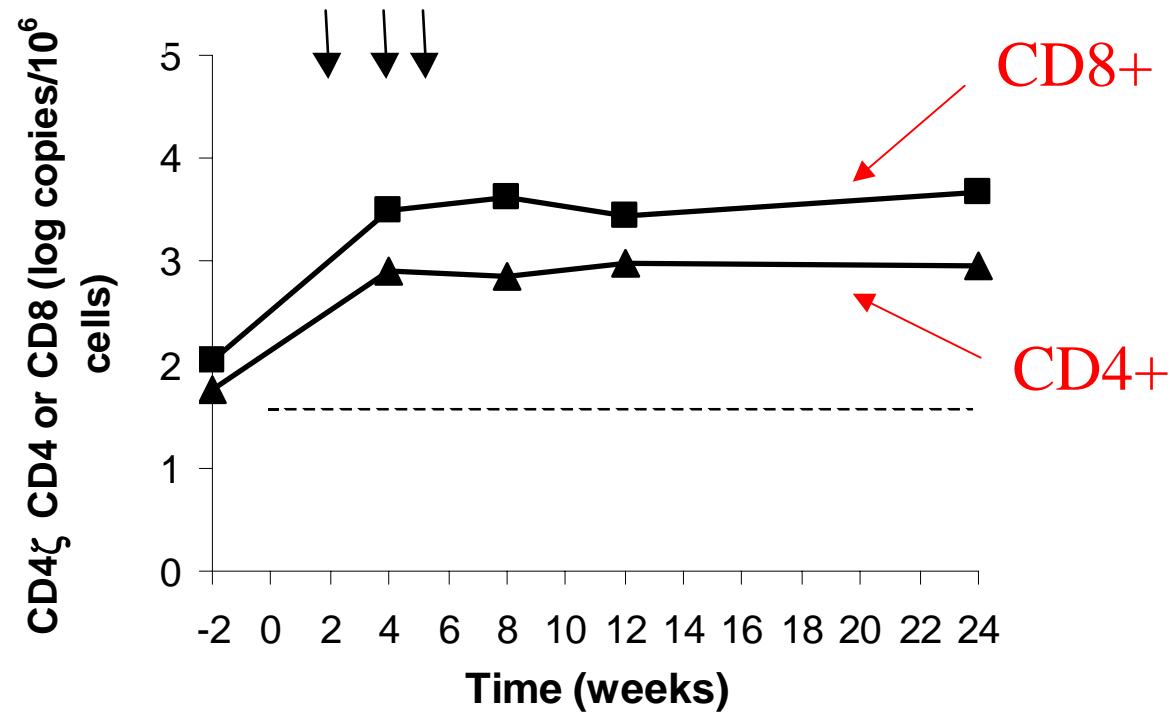
Mitsuyasu et al, *Blood* 2000; 96:785



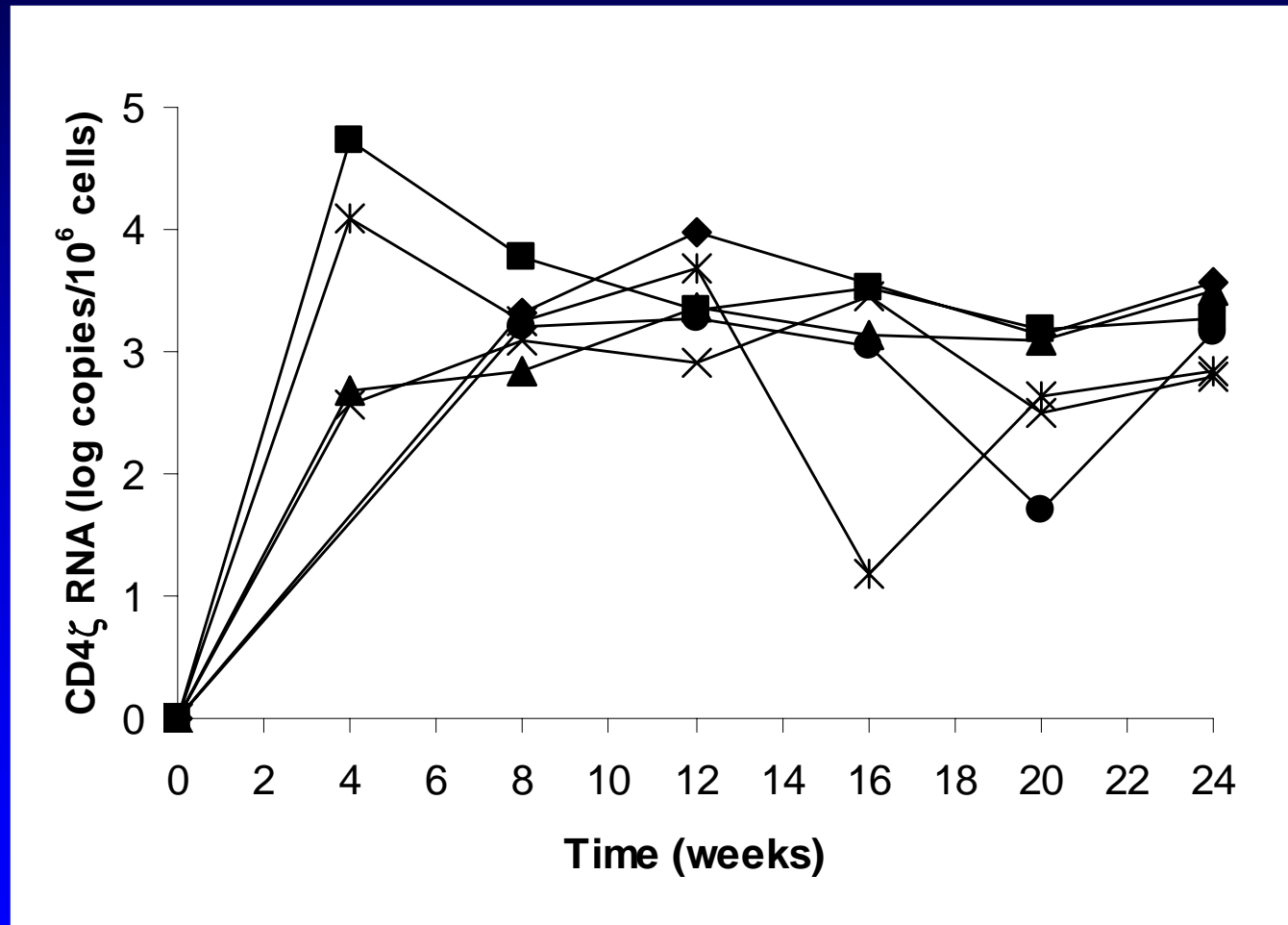
## Persistence of cells with chimeric TCR DNA



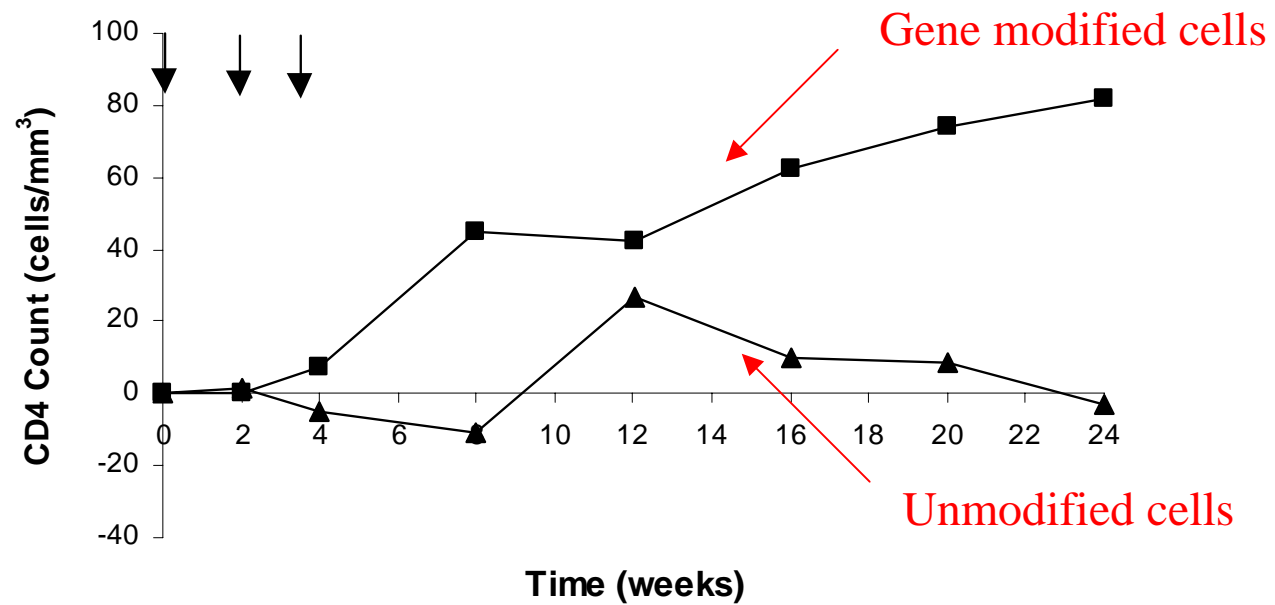
## Persistence of cells with chimeric TCR DNA



## Persistence of cells expressing chimeric TCR RNA



## CD4+ T cell counts after cell infusions



# Plasma viral load over time

